



NASA's Space Launch System: *A Flagship for Exploration Beyond Earth's Orbit*

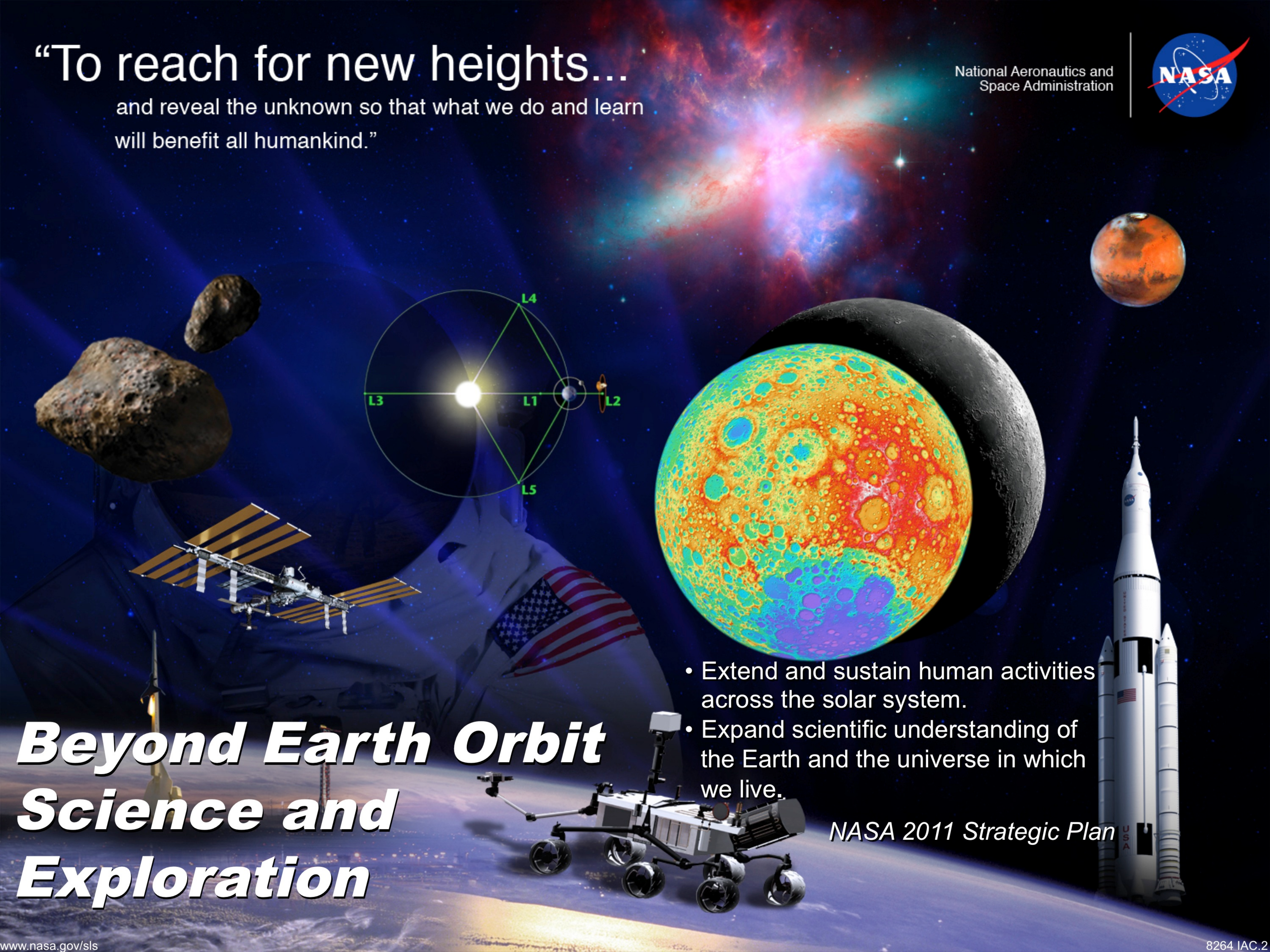
Todd A. May
Program Manager
Marshall Space Flight Center
U.S.A.

October 2012



“To reach for new heights...
and reveal the unknown so that what we do and learn
will benefit all humankind.”

National Aeronautics and
Space Administration



- Extend and sustain human activities across the solar system.
- Expand scientific understanding of the Earth and the universe in which we live.

NASA 2011 Strategic Plan

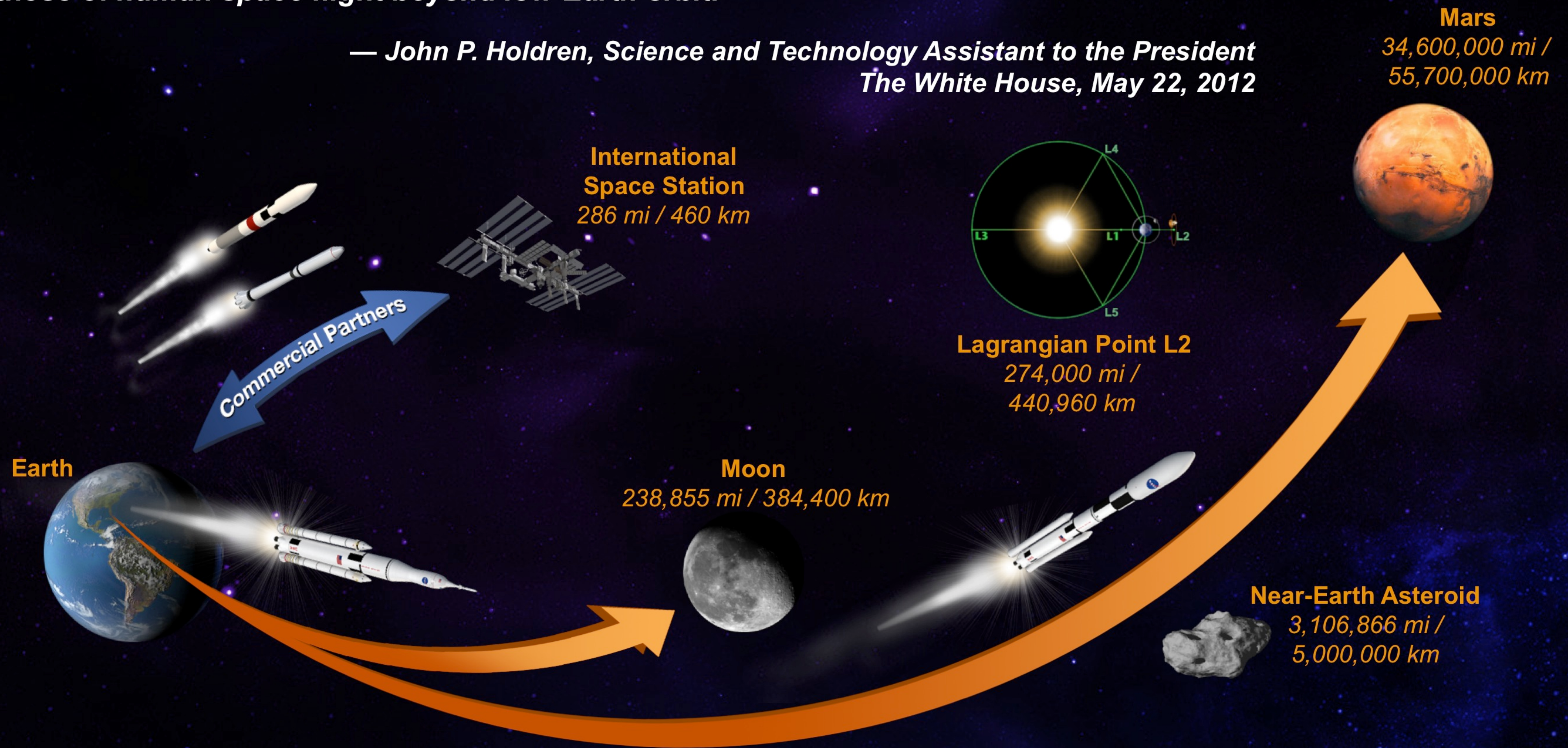
Beyond Earth Orbit Science and Exploration

The Future of Exploration



“This expanded role for the private sector will free up more of NASA’s resources to do what NASA does best — tackle the most demanding technological challenges in space, including those of *human space flight beyond low-Earth orbit*.”

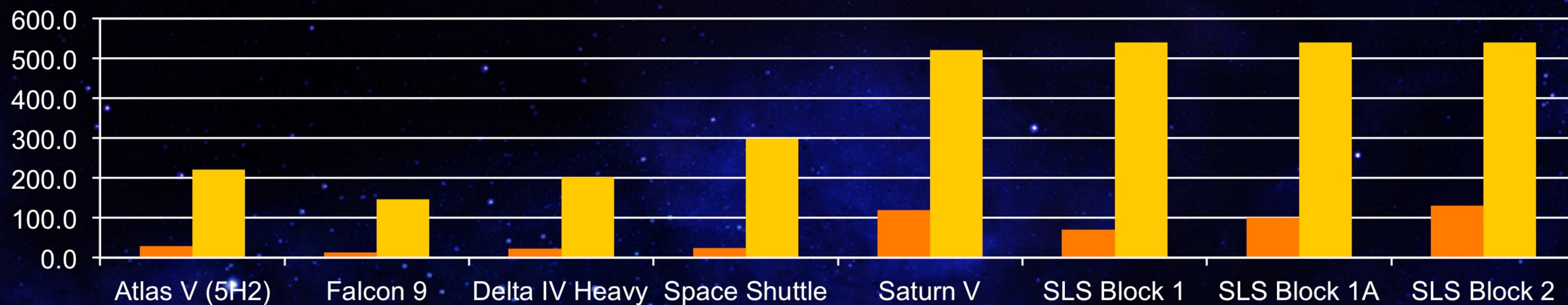
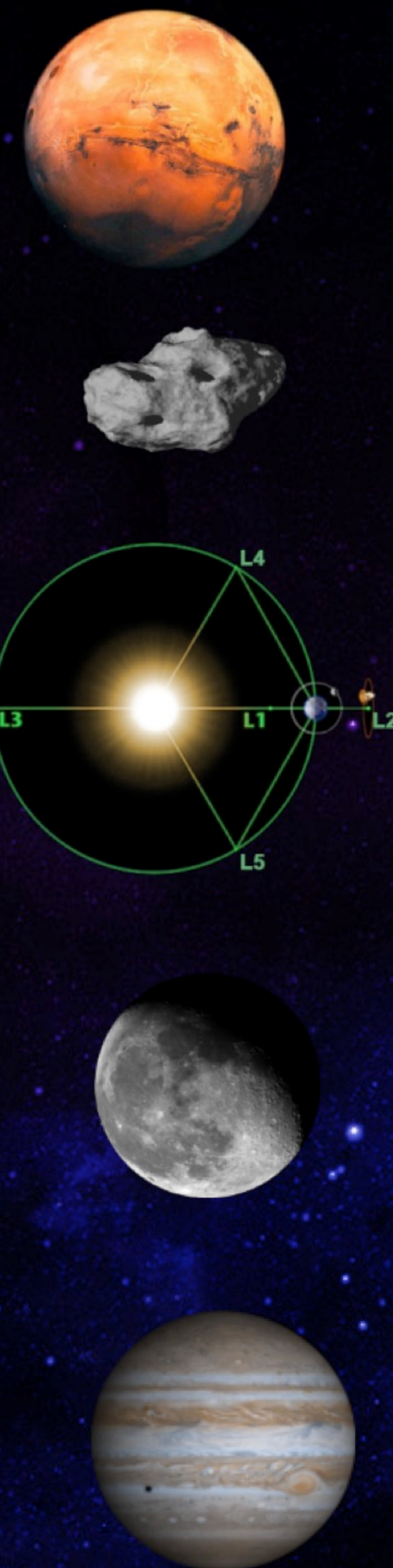
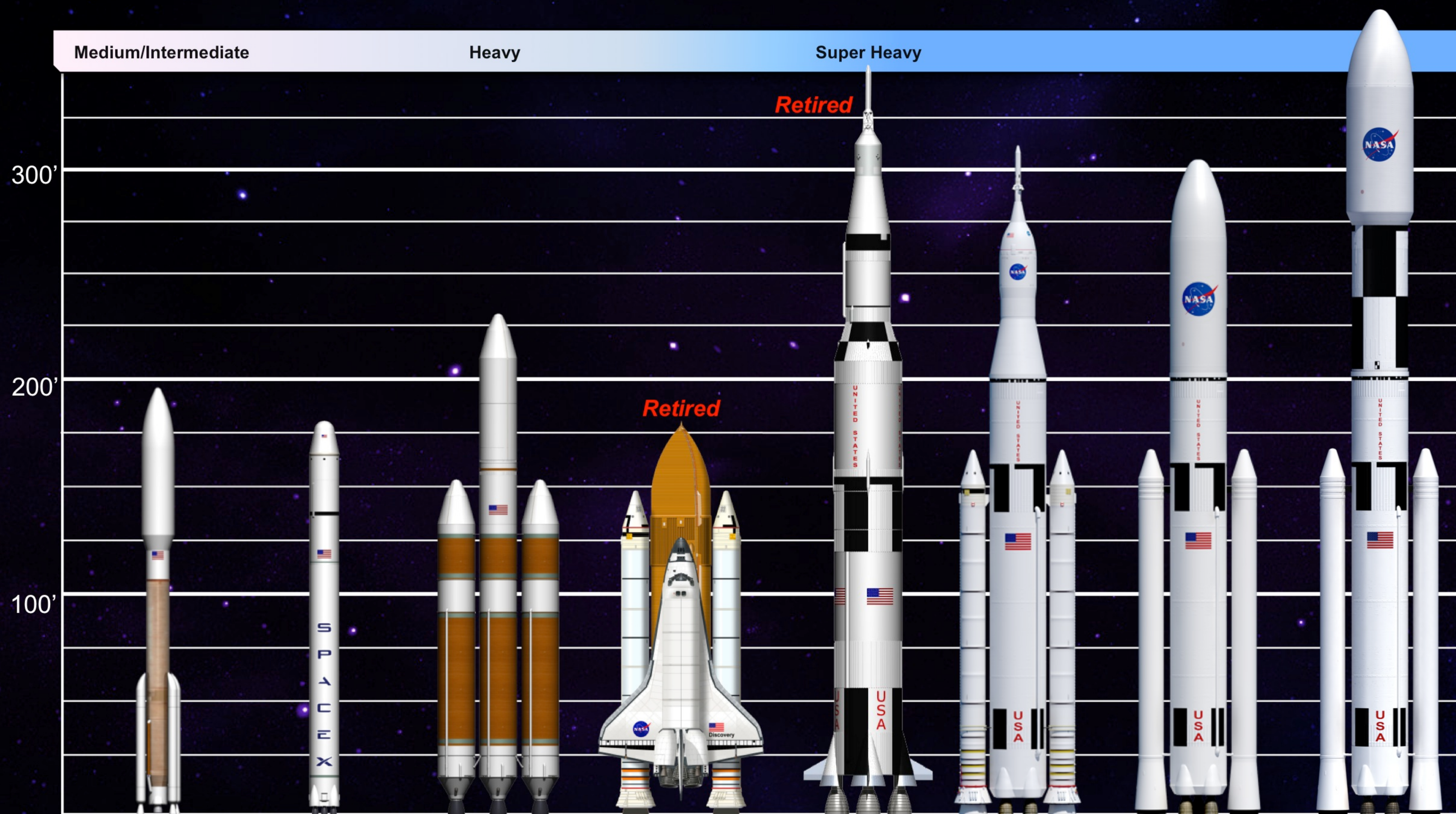
— John P. Holdren, Science and Technology Assistant to the President
The White House, May 22, 2012



“My desire is to work more closely with the human spaceflight program so we can take advantage of synergy. We think of the SLS as the human spaceflight program, but it could be hugely enabling for science.”

— John Grunsfeld, Associate Administrator
NASA Science Mission Directorate
Nature, Jan 19, 2012

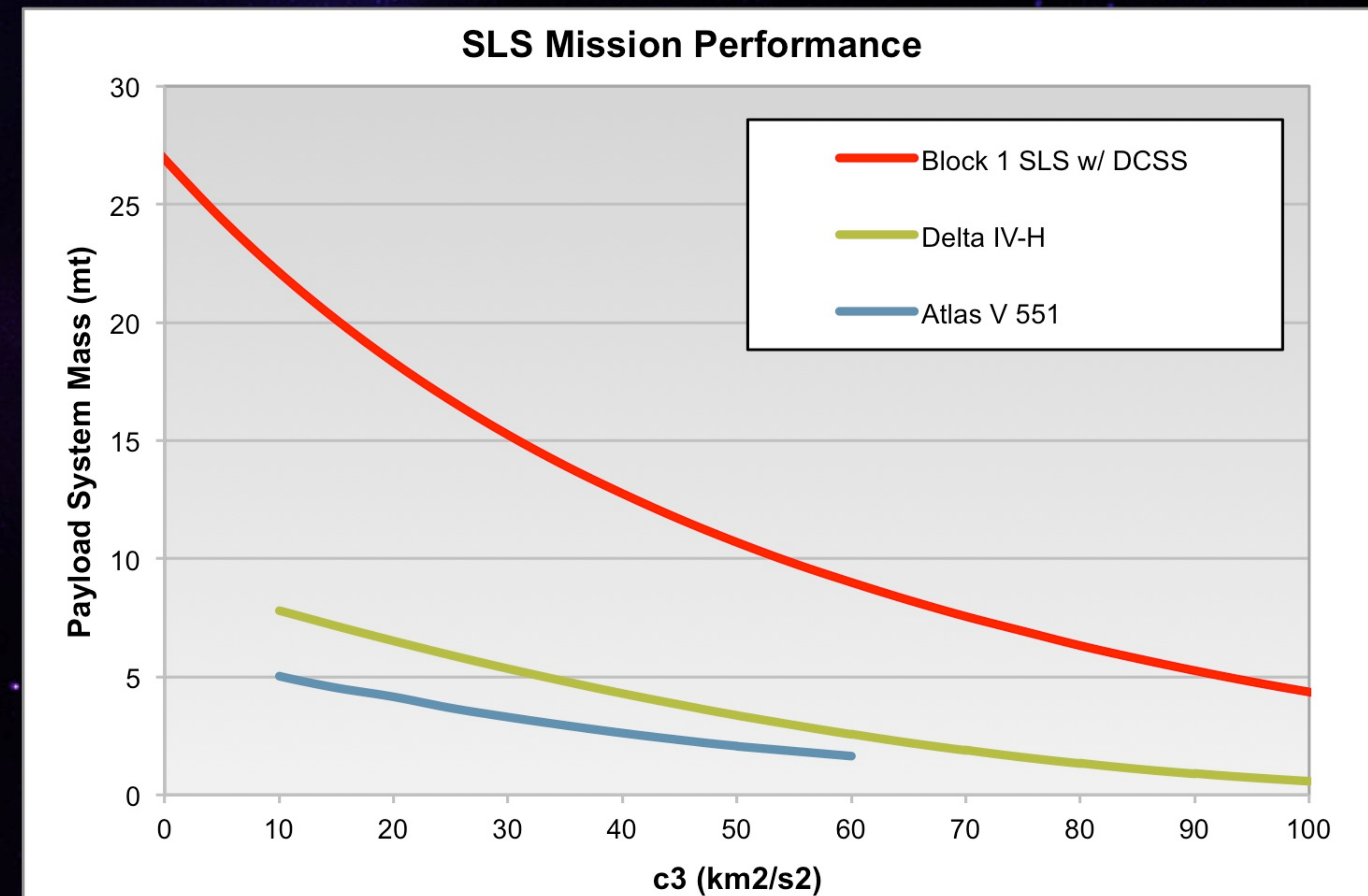
Most Capable U.S. Launch Vehicle



SLS Benefits



Attributes	Outcomes
• Greater volume and mass capability/margin	• Increased design simplicity • Fewer origami-type payload designs needed to fit in the fairing
• Single launch of multiple elements • Fewer launches and deployments • Fewer critical operations	• Increased mission reliability and confidence • Less risk
• High-energy orbit • Shorter trip times	• Less expensive mission operations
• Increased lift capacity • Increased payload margin	• Less Risk

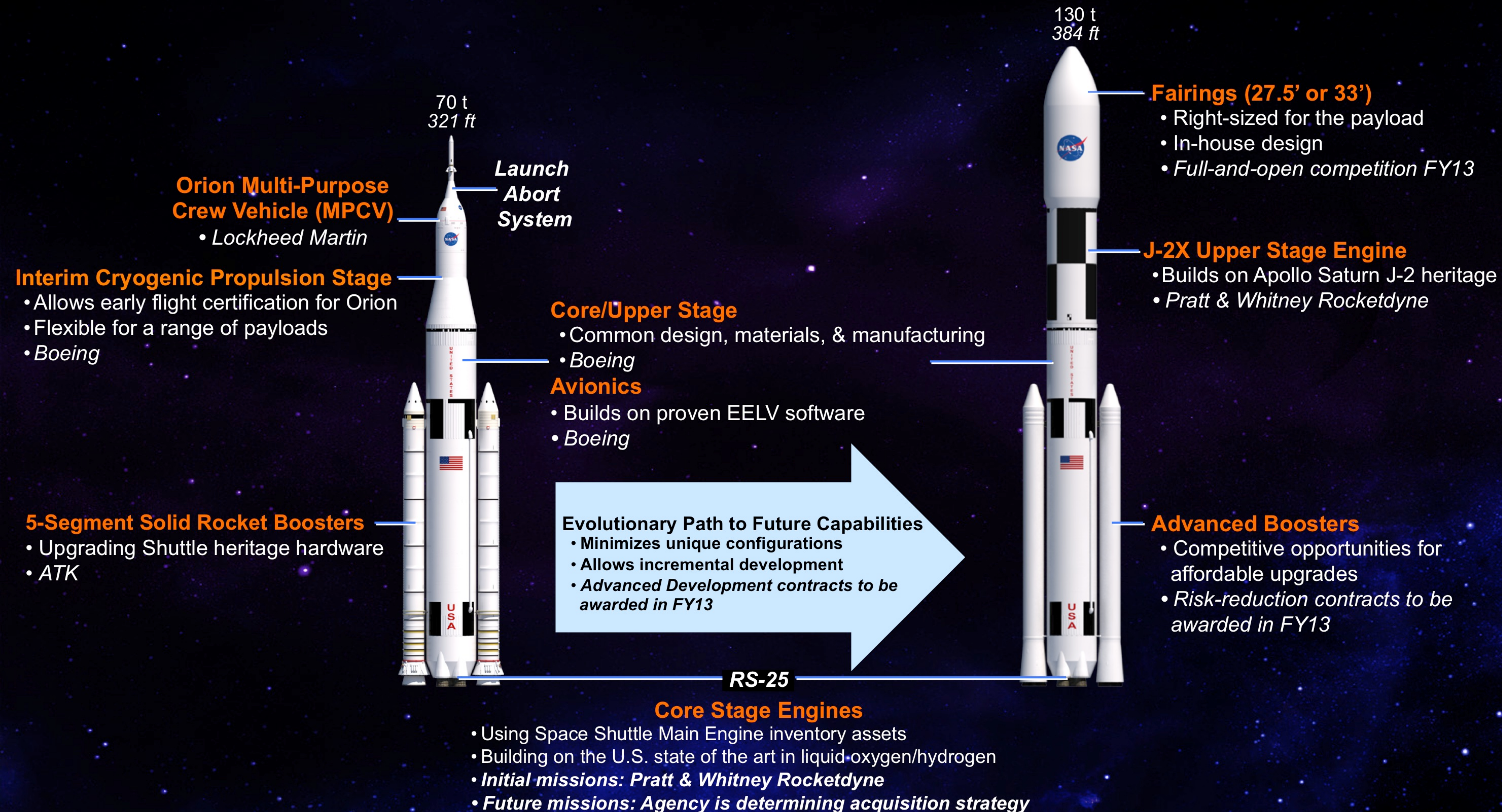


SLS: Safe, Affordable, and Sustainable



INITIAL CAPABILITY, 2017–21

EVOLVED CAPABILITY, Post-2021



A Platform for Global Cooperation

5-Segment Solid Rocket Booster

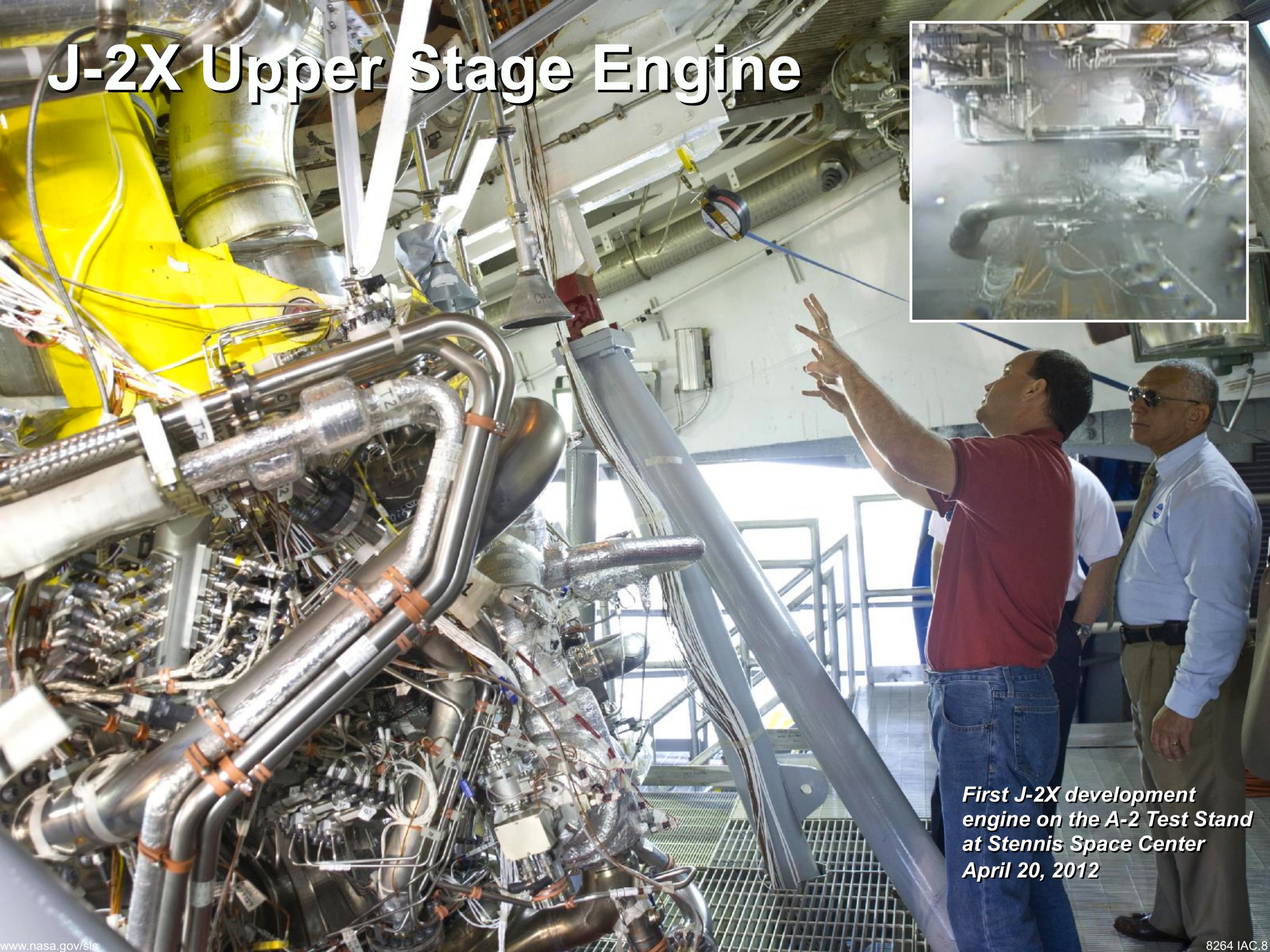


Qualification Motor Casting, July 2012



Development Motor Test 3
September 8, 2011
ATK Promontory, Utah

J-2X Upper Stage Engine



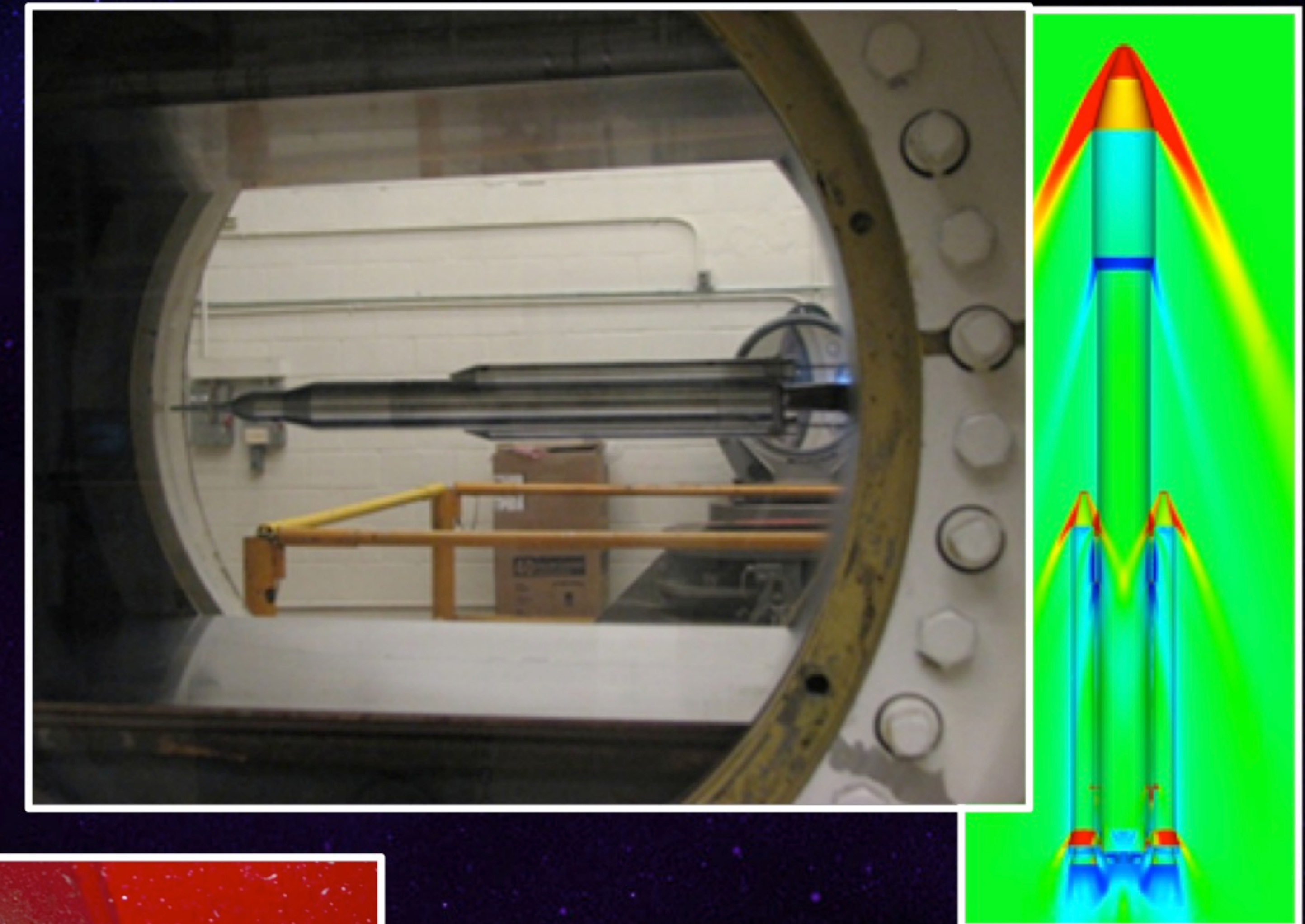
*First J-2X development
engine on the A-2 Test Stand
at Stennis Space Center
April 20, 2012*

SLS: Preparing for First Flight in 2017



Avionics Test-Bed
May 2012

**Force and
moment wind
Tunnel testing**
July 2012



Systems Engineering & Integration



**Ring Milling for
Multi-Purpose
Crew Vehicle-to-
Stage Adapter
(MSA) for 2014
Exploration Flight
Test**
June 2012



MSA Pathfinder hardware
June 2012



**Stages manufacturing
demos and tooling
preparation for friction stir
welding**
April 2012



For More Information



www.nasa.gov/sls
[www.twitter.com/nasa_sls](https://twitter.com/nasa_sls)
[www.facebook.com/nasasls](https://facebook.com/nasasls)

A composite image of the solar system. The Sun is a large, bright yellow-orange sphere in the upper left. To its right is Earth, a blue and white sphere, with a small satellite in orbit. Further right is the Moon, a small grey sphere. To the right of the Moon is Mars, a large reddish-orange sphere with dark spots. In the foreground, numerous brown, rocky asteroids of various sizes are scattered across the dark blue space. A faint, glowing ring of light is visible in the upper right background.

*Somewhere, something incredible
is waiting to be known.*

— Carl Sagan